

**BELLSOUTH**

DOCKET NO. 96-112

**Maurice P. Talbot, Jr.**  
Executive Director-Federal Regulatory

**EX PARTE OR LATE FILED**

July 30, 1996

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**Ex Parte**

Mr. William F. Caton  
Acting Secretary  
Federal Communications Commission  
1919 M Street, NW, Room 222  
Washington, D.C. 20554

**RECEIVED**

**JUL 30 1996**

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

**Re: Written Ex Parte, CC Docket No. 96-112, Allocation Costs Associated  
with LEC Provision of Video Programming Services**

Dear Mr. Caton:

BellSouth hereby submits for the record this letter and the attached analysis of the "Consumer Welfare Effects of Proposed Regulatory Treatment of LEC Broadband Costs" in the above-referenced proceeding.

The attached analysis concludes that the Commission's proposal to reduce LEC interstate earnings in proportion to LEC investment in broadband wireline systems as a means of "sharing economies of scope" with telephone ratepayers will reduce the value of the business case for undertaking such investment. And, if this disincentive results in carriers foregoing their tentative broadband investment plans, the loss of consumer welfare would be very substantial both in absolute and relative terms -- more than sixty times the short term gain from forced rate reductions.

In the past few weeks BellSouth representatives have met on different occasions with members of the Commission and its staff and discussed their concerns that the proposed (fixed) fifty-fifty allocation to regulated and video services of telco, broadband wireline investment would, if accompanied by earnings reductions through exogenous price cap index adjustments or other means, reduce the likely level and rate of LEC broadband investment. Should that happen, of course, consumers -- as users of cable services and potential users of other broadband services, like telco-provided Internet access services -- would be denied the benefits of introducing competition to incumbent cable system operators and to the availability of an array of new, broadband services.

Thus, we continue to urge the Commission to consider the impact of its proposed rules on the incentives of LECs to invest in broadband systems, in furtherance of the express intent of Congress in passing the Telecommunications Act of 1996 "...to provide for a pro-competitive, de-regulatory national policy framework designed to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all Americans by opening all

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telecommunications markets to competition....” As the Commission has found on numerous occasions, cable operators in local video markets have substantial economic power that is unchecked by competitive alternatives in the marketplace. Telco investment in broadband systems may provide such alternatives, if LECs are not discouraged from doing so by well-meaning, but ultimately self defeating cost allocation and complementary rule changes now being considered by the Commission and supported by incumbent cable services providers.

As a means of clarifying the interest of consumers in this proceeding, BellSouth asked Dr. Larry F. Darby of Darby Associates, and former Chief of the Common Carrier Bureau, to estimate the impact on consumer welfare of the Commission's proposal (50-50 allocation with an exogenous price cap adjustment).

In the accompanying analysis, Dr. Darby examines and estimates expected change in consumer welfare from potential rate and service changes in four related markets -- the market for interstate access, the market for local exchange telephone services, the market for local cable television services and the market for broadband Internet access -- all of which would be implicated by Commission adoption of its proposal and assuming state emulation of the Commission's proposal.

The analysis clearly indicates that the expected gain in consumer welfare from the Commission's proposal in terms of forced rate reductions for interstate and intrastate regulated services would be almost inconsequential in absolute terms. The welfare gain in regulated services would be dwarfed by the economic welfare foregone by consumers, should they be stripped of new telco-provided broadband services options in competition with cable systems, or in the form of new Internet broadband services, as a result of economically rational carrier reactions to the penalty on regulated earnings imposed by the Commission's proposal. Dr. Darby summarizes his results as follows on pages 1-2 of the attached analysis:

"We find the potential consumer welfare that would be foregone by decisions of LECs not to invest in existing and new markets for broadband services far outweighs the gain from rate reductions for regulated services forced by regulators as a means of "sharing economies of scope with regulated ratepayers."

The potential gains to "ratepayers" as users of regulated telephone services are less than two percent of their potential losses as consumers of video services, should cost allocation rules effectively discourage LEC wireline broadband investment. (emphasis added)

The analysis makes clear that short term, visible gains in consumer welfare from the Commission's proposal for forced rate reductions will have dramatically larger and quite severe potential longer term impacts on consumers of broadband services. We hope this analysis adds to the Commission's understanding of the consumer welfare

implications of the issues in this docket and the trade-offs among traditional goals of common carrier regulation and newer competition policy goals articulated in the Telecommunications Act of 1996.

Pursuant to Section 1.1206(a)(1) of the Commission's Rules governing written ex parte presentations, two copies of this letter and the analysis of "Consumer Welfare Effects of Proposed Regulatory Treatment of LEC Broadband Costs," by Dr. Larry F. Darby of Darby Associates are attached for inclusion in the public record in the above-captioned proceeding. Copies of this letter and Dr. Darby's Analysis are also being provided to FCC staff on the attached Distribution List.

Should you have any questions regarding this matter, please contact me.

Sincerely,

A handwritten signature in black ink that reads "Maurice P. Talbot, Jr." The signature is written in a cursive, flowing style.

Maurice P. Talbot, Jr.  
Executive Director - Federal Regulatory

Attachments

cc: See attached Distribution List

Distribution List  
for Analysis of  
"Consumer Welfare Effects of  
Proposed Regulatory Treatment of  
LEC Broadband Costs"

by  
Larry F. Darby  
Darby Associates  
July 26, 1996  
CC Docket No. 96-112  
July 30, 1996

Ken Ackerman  
James Coltharp  
Rebecca Dorch  
Joseph Farrell  
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Gregory Rosston  
Martin Stern  
Peter Tenhula  
Anita Wallgren  
Debra Weber  
Debra Weiner  
Christopher Wright

# **Consumer Welfare Effects of Proposed Regulatory Treatment of LEC Broadband Costs**

**Larry F. Darby  
Darby Associates  
Washington, D.C.**

In support of Comments by

**BellSouth Corporation and  
BellSouth Telecommunications, Inc.**

**In the Matter of Allocation of Costs Associated with Local Exchange  
Carrier Provision of Video Programming Services  
CC Docket 96-112  
July 26, 1996**

**Summary.** This addresses consumer welfare implications of rules considered by the NPRM in CC Docket No. 96-112 -- Allocation of Costs Associated with Local Exchange Carrier Provision of Video Programming Services. The main issues are how to allocate common costs between unregulated offerings, like video programming services, that will be introduced by incumbent local exchange carriers and regulated services, like basic telephony, they already offer; and, whether corresponding adjustments should be reflected in LEC's price cap indexes.

The analysis begins by pointing out potential conflicts in the policy directions of Congress, particularly conflicts relating to rule changes leading to lower rates for regulated services, that may diminish LEC incentives to invest in new technologies and broadband systems and thereby deny consumers new video services options.

After recognizing the contention of some LECs that the rules proposed by the Commission in this docket will discourage them from investing in wireline broadband systems, the analysis attempts to measure the static consumer welfare implications of rate changes in four classes of service that might be affected by the costing rules. Using a familiar, static, partial equilibrium consumer welfare model, the analysis compares estimates of changes in consumer surplus from expected rate changes.

We find the potential consumer welfare that would be foregone by decisions of

LECs not to invest in existing and new markets for broadband services far outweighs the gain from rate reductions for regulated interstate and intrastate services forced by regulators as a means of "sharing economies of scope with regulated ratepayers".

The potential gains to "ratepayers" as users of regulated telephone services are less than two percent of their potential losses as consumers of video services, should cost allocation rules effectively discourage LEC wireline broadband investment.

Efforts to guarantee that consumers gain from telco introduction of broadband technologies by lowering rates for regulated services may in fact ensure that consumer welfare will be lessened by the reduction of their opportunity to enjoy competitive provision of telco provided, local broadband distribution services.

Introduction. In matters related to broadband technologies, the Commission is directed by the Telecommunications Act of 1996 to promote:

flexible market entry, enhanced competition, streamlined regulation, diversity of programming choices, investment infrastructure and technology, and increased consumer choice.<sup>1</sup>

These newly articulated Congressional goals have been added to traditional common carrier goals of assuring just and reasonable rates for regulated services.

Policies that uniformly advance multiple goals may sometimes be adopted, but more frequently there is tension among them. This requires the Commission to balance and to recognize that pursuit of traditional goals in telephony may occasion shortfalls in promoting consumers' broader interests spelled out in the new Act.

One important instance of the necessity for the Commission to trade off may arise in the context of allocation of common broadband network costs among various classes of services -- regulated and nonregulated services; entertainment video, broadband data, voice service, and new classes of unregulated services yet to be identified. In CC Docket 96-112 the Commission is evaluating comments suggesting various cost allocation schemes and related adjustments to its rules.

General Effects of Regulatory Cost Allocations. For value maximizing business planners and managers, the allocation of common network costs to different services is not a factor. The relevant question is whether total revenue from the investment will cover all its direct and common costs. Common cost allocation to different services is determined retrospectively by market prices and revenue contributions above direct costs. Thus, the Commission's costing methodologies will matter to business

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<sup>1</sup> See para. 5 of CC Docket No. 96-112, citing para. 4 of CC Docket No. 96-99 and Conference Report at 172, 177-178.

planners, and will influence decisions of carriers to invest in wireline broadband systems if, and only if, the regulatory allocation is complemented by rule changes that influence carrier prices or earnings. Since LEC-provided video services are unregulated, cost allocation impacts on investment will be realized, if at all, through enforced changes in rates and earnings of state and federally regulated services

In this docket, the Commission has proposed both -- to adopt a mandatory allocation of telco common costs between regulated services and nonregulated video services, and to reflect this fixed allocation in prices for regulated interstate services and in interstate earnings by requiring an exogenous reduction in the price cap index. A Commission decision to do that could lead to emulative intrastate rule changes that would magnify the adverse impacts on carrier earnings.

The prospect for immediate reductions in carrier earnings associated with increased broadband investment must be considered by rational, value maximizing LEC capital budgeting and business/network planning processes.

**NPRM Proposal Will Discourage Broadband Investment.** Penalizing LEC broadband investment by forcing earnings reductions in markets for regulated services will diminish the value of the broadband business case and reduce the likelihood, timing and/or level of such investment by LECs. The force of the disincentive will depend on the details and form of the regulatory penalty on earnings imposed.

Our analysis indicates that the proposed fifty-fifty allocation of common costs to regulated interstate services combined with an exogenous adjustment of the price cap index, along with similar treatments in BellSouth's nine intrastate jurisdictions, will lead to substantial reductions in both the net present value (NPV) and in the internal rate of return (IRR) from BellSouth (BLS) investment in broadband distribution systems.

This forced "regulatory" reduction in the NPV and IRR associated with broadband investment costs raises the possibility that financial incentives to invest will be sufficiently reduced, so that BLS and/or other LECs will decide not to undertake these investment programs, or they will diminish the amount and pace of investment.

Thus, the Commission proposals raise the prospect that actions taken on behalf of one class of users (interstate access customers), or on behalf of consumers as users of telephone services, may lessen competition and consumer choice in the market for broadband services and thereby thwart clear Congressional intent.

**Modelling the Consumer Welfare Effects of the NPRM Proposal.** As set out by the new Law, the broad public interest in the NPRM cost allocation proposal depends on the weight of the costs and benefits in several domains. To get a sense of the relative magnitude of these, the analysis below is designed to explore the potential static welfare impact in markets for four classes of service, each of which is clearly implicated by the NPRM proposal. These four classes are: interstate access services,

intrastate local exchange services, unregulated video programmed distribution services and other (regulated or unregulated) telco broadband offerings.

The purpose of the analysis is to consider some implications of the NPRM proposal by estimating the order of magnitude of consumer welfare at stake in each of these submarkets and how it might be affected by the Commission's rules.

The hypothetical demand schedule in Diagram 1 (Appendix A) depicts two prices and the corresponding quantities taken by users. The shaded triangle is the change in consumer "surplus" and is frequently regarded as approximating the impact on consumer welfare resulting from a change in market price. An increase from  $P_1$  to  $P_0$  reduces consumer welfare by the amount of triangle, while a price reduction ( $P_0$  to  $P_1$ ) increases consumer welfare. The change in welfare ( $\Delta W$ ) can be visualized as the area of the shaded triangle with dimensions  $\Delta P$  and  $\Delta Q$ . That is,

$$(1) \quad \Delta W = \left(\frac{1}{2}\right) \Delta P \Delta Q$$

The own price elasticity of demand (over that interval) is defined:

$$(2) \quad \epsilon = \left(\frac{\Delta Q}{Q}\right) \left(\frac{P}{\Delta P}\right)$$

Solving (2) for  $\Delta Q$ , substituting the result in (1) and rearranging permits expressing the change in consumer welfare from a price change as a function of a) the percentage change in price, b) the original equilibrium price and quantity -- or total revenue -- and c) the own price elasticity of demand. Thus, the change in consumer welfare from a price change can be approximated by estimating (3) as written below.<sup>2</sup>

$$(3) \quad \Delta W = \frac{1}{2} \left(\frac{\Delta P}{P}\right)^2 P Q \epsilon$$

The diagram is also helpful to illustrate consumer welfare created by introduction of a new service. Suppose a new service is introduced and priced at  $P_0$ , whereupon consumers take quantity given by  $Q_0$ . Total consumer welfare created is

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<sup>2</sup> This formulation was set out by Harberger to estimate welfare losses from monopoly pricing. See Arnold Harberger, "Monopoly and Resource Allocation", American Economic Review Papers and Proceedings, vol. 44 (1954), pp. 77-87. Despite various criticisms, the approach has been widely used as a method of first approximation and is helpful in enlightening the issues addressed here.



given by the area of irregular quadrilateral  $OP^*EQ_0$ , of which rectangle  $OP_0EQ_0$  represents revenue captured by the firm and triangle  $P_0P^*E$  represents consumer surplus. Inasmuch as the provision of the service occasions some cost, the quadrilateral  $OP^*EQ_0$  overstates the addition of economic welfare. For analytical convenience, we shall assume a) constant costs with respect to output levels and b) that market price  $P_0$  is equal to the firm's average cost. These assumptions finesse the need to consider "producer surplus" and define the total cost of the new service equal to its total revenue. The result permits us to focus on consumer surplus from the new service as the addition to economic welfare.

The total change in consumer welfare attributable to the cost allocations and related rule changes can be roughly approximated by:

$$(4) \quad \Delta W = \Delta W_F + \Delta W_L + \Delta W_V + W_I$$

where,

$\Delta W_F$  is the consumer welfare change resulting from forced interstate rate reductions;  
 $\Delta W_L$  is the consumer welfare change resulting from forced intrastate rate reductions;  
 $\Delta W_V$  is the consumer welfare change from CATV rate reductions occasioned by LEC provision of competitive video services; and,  
 $\Delta W_I$  is the consumer welfare change from telco introduction of other broadband services made possible by construction of a broadband network.

**Impact of Enforced Rate Reductions -- Interstate Services.** Consider first,  $\Delta W_F$ , the welfare impact of costs allocated to regulated interstate services and reflected in (federal) interstate rates. There are several possible consumer welfare outcomes of allocating costs to regulated services, depending on market structure in interstate access, the form and effectiveness of the regulatory constraint on earnings and the behavior of LEC access customers in response to access rate changes.

In a market characterized by monopoly power and/or earnings regulation under traditional rate of return constraint, costs assigned to regulated services will be reflected wholly or in part in rates for regulated services. Under rate of return regulation and monopoly market structure, the costs would be largely flowed through to LEC interstate customers. However, it is arguable, with no clearcut theoretical basis or empirical evidence to support the contrary, that price cap LECs electing productivity offsets that make sharing unnecessary will have no incentive or opportunity to pass costs through interstate customers. Moreover, current prospects for dramatically increased competition in the next year in local telephony markets indicate that market forces will become increasingly effective in disciplining carrier pricing. Thus, if the Commission does nothing specifically to reflect the cost impact of carrier broadband investment in the domain of regulated services, there is a very good chance that regulatory accounting cost allocations to regulated services will have little, if any, impact on rates.

The NPRM proposes to go beyond assuring that regulated rates will not go up as a result of LEC broadband investment. It proposes rule changes that would require interstate access rate reductions. Under that scenario, the impact on consumer welfare, as reflected in the value of  $\Delta W_F$ , will depend on the response of LEC customers to the rate reduction. In particular, the impact on consumer welfare of a LEC rate reduction will depend in the first instance on whether the LECs interstate customers, principally the interexchange carriers (IXCs), flow the reduction through to end users, or whether they capture it for their shareholders by reflecting it in increased earnings. In the latter case, ratepayers do not benefit directly. The result of the LEC rate reduction will be a transfer of wealth from LEC shareholders to IXC shareholders -- a transfer with no clear public interest justification.

If all or part of the forced LEC rate reduction is passed through to users of long distance services, the impact on welfare can be approximated according to the relations between price and price changes, quantity and long distance demand elasticity spelled out above.

We might anticipate that the interstate rate reduction associated with a 50-50 allocation of prospective broadband investment between regulated and unregulated services would be on the order of \$113 million per year for all BellSouth exchanges<sup>3</sup>. Based on an estimate of \$3.3 billion for 1996 BellSouth interstate access revenue, this reduction equates to an average potential rate reduction ( $\Delta P/P$ ) of approximately 3.4%.<sup>4</sup> Revenue of \$3.3 billion is price times quantity and can be substituted for  $PQ$  in equation (3) above. The price elasticity of demand ( $\epsilon$ ) for long distance services has been variously estimated. We will use (minus) 0.8, which is the approximate mean for several recent estimates.<sup>5</sup> Substituting these values into equation (3) indicates the following crude measure of the welfare gain from a full flow-through by the IXCs of the enforced rate reduction.

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<sup>3</sup> This estimate is taken from the table on page 16 of the analysis by Theodore Barry and Associates (FCC CC No. 96-112: Analysis of Cost Allocation and Methodology; July, 1996). Specifically, we multiplied by nine their \$49.5 million estimate of the average annual revenue requirement impact of the FCC (wire center allocation) proposal. The result is an estimate of \$450 million for the total potential revenue impact. Apportioning that amount by the Part 36 ratio of costs allocated to interstate and intrastate (one fourth and three fourths) gives a measure of the potential rate impact from the assumed regulatory treatment of \$112.5 and \$337.5 respectively.

<sup>4</sup> Estimated by JP Morgan, Telecommunications Review; January 16, 1996, p. 39

<sup>5</sup> See Michael R. Ward, "Measurements of Market Power in Long Distance Telecommunications", Federal Trade Commission (mimeo), April 1995, pp. 37-8. Estimates vary according to assumed lags and statistical methods used (ordinary or two-stage least squares procedures), but there is remarkably little dispersion about this mean in the estimates reported by Ward.

$$(3.1) \quad \Delta W_F = (.5)(-.034)^2(\$3.3B)(-0.8)$$

$$(3.2) \quad \Delta W_F = \$1,525,920$$

The results suggest modest, almost inconsequential, gains in consumer welfare in BellSouth territory from a forced rate reduction to IXC's of \$113 million to reflect exogenous price cap treatment of 50-50 apportionment between regulated and unregulated services of BLS projected broadband investment.

Inspection of (3.1) suggests no clear sources for error. The sensitivity of estimated consumer welfare impacts to values of the policy variable,  $(\Delta P/P)^2$ , is of some interest. Some will argue that the IXC's will not pass forward the entire forced access charge reduction to long distance customers, while others might urge even greater rate reductions than the 3.4% estimated here. The order of magnitude of the impact of each of these is suggested by recalculating (3.1) on alternative assumptions. If the rate change is absorbed by the IXC's, there will be no gain in welfare. If half is passed through by the IXC's to long distance users, the welfare gain is reduced to less than \$400,000. If the Commission were disappointed with such meager results and mandated a doubling of the rate reduction to 7%, the consumer welfare gain would quadruple to reach about \$6,000,000, if all were passed through and less, proportionately, if all or part were to be absorbed, as in the past, by IXC shareholders.

*Impact of Enforced Rate Reductions -- Intrastate Services.* The cost allocated to regulated services by the Commission in this proceeding will not all be reflected in changes in interstate costs. Under Part 36 of the rules, regulated costs defined under Part 64 are allocated between the interstate and intrastate jurisdiction in proportions of one-quarter to interstate and three-quarters to intrastate. It is not clear, or predictable, exactly how the nine state commissions with jurisdiction over BellSouth services will react to a decision by the FCC to force a rate reduction for regulated services.

One possibility is that there will be no intrastate rate or earnings impact. The company is, or will soon be, subject to price cap regulation in all nine jurisdictions, so there is no reason in principle why the FCC's action should precipitate future state action effecting BellSouth's intrastate rates or its earnings. However, it is possible that some or all states may choose to emulate, wholly or in part, the FCC action and require some rate reduction for regulated services. In that event, there will be some impact on consumer welfare, with the total impact depending on the amount and structure of the rate reductions and the services chosen for rate relief.

Though a detailed analysis is beyond current purpose, we can create an

impression of the order of magnitude of possible consumer impact. Our estimate of the potential level of annually recurring charges associated with the broadband investment in question and assigned to intrastate services by Part 36 is \$337.5 million (See note 3 above). BellSouth's total intrastate regulated revenue for 1996 will be about \$8 billion, of which more than \$7.2 billion is forecast to be for local service and about \$800 million is for intrastate access.<sup>6</sup> With somewhat fewer than 22 million lines forecast for 1996, intrastate local service revenue per line will be on the order of \$350.00 in 1996.

Assuming the states reflect the entire \$337.5 million in reduced local service charges, this implies a potential percentage rate reduction of about 4.7%, which we will use to estimate  $\Delta P/P$  in equation (3) above.

The elasticity of demand for local exchange service is of course quite low. The coefficient has recently been estimated at  $\epsilon = -.02$  by Crandall and Waverman, and has been consistently found to be less than  $-.05$ , the conservative figure we will use to calculate consumer welfare gains.<sup>7</sup>

Substituting these values into the welfare equation and solving for the change associated with local exchange rate reductions suggests that welfare gains from reducing rates for local service ( $\Delta W_L$ ) are likely to be quite modest.

$$(3.3) \quad \Delta W_L = (.5)(-.047)^2(\$7.2B)(-0.05)$$

$$(3.4) \quad \Delta W_L = \$397,620$$

The meager gain in consumer welfare resulting from a modest rate reduction is not surprising, given the inelasticity of demand for local service. At current (very low) rates and (very high) subscriber penetration, quite substantial rate reductions are required to generate significant additions to consumer's surplus. The results simply confirm what is widely known. Modest reductions in local rates will avail us little increased economic welfare. Doubling both the estimated elasticity and the hypothesized rate reduction, to illustrate the sensitivities of the estimate of increased consumer surplus from a forced intrastate rate reductions accompanying BellSouth investment in wireline broadband systems, will lift the estimated gain in consumer

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<sup>6</sup> JPMorgan, p. 39

<sup>7</sup> See, Robert W. Crandall and Leonard Waverman, Talk is Cheap: The Promise of Regulatory Reform in North American Telecommunications, The Brookings Institution (Washington, DC) 1995, page 92 and especially note 35.

surplus by eightfold to about \$3.2 million, which is substantially less than a half percent of the value of current local revenue generated in BellSouth service areas.

**Foregone Investment -- Impact in Unregulated Video Services Market.** Forced rate reductions and earnings hits resulting from regulatory adjustments designed to "share economies of scope with telephone ratepayers" will reduce the present value of broadband investments, diminish the incentive of BellSouth and other LECs to undertake the risk and encourage companies to forego the investment and to channel the scarce financial capital elsewhere. That outcome would be inconsistent with the purpose of the 1996 Act to enhance video competition and encourage broadband investment. But, more to the point, foregoing investment would lead to significant reduction in two key areas of clear Congressional concern -- consumer choice and video services diversity.

BellSouth's failure to invest in wireline broadband systems will not only deny consumers alternatives in the marketplace, but will also strip users of the disciplining effects LEC broadband entry would have on incumbent cable television services providers. Both diminish consumer welfare below what it otherwise would have been. Telco construction of wireline broadband systems will provide an alternative in the local video marketplace to sole source supply by incumbent cable television providers. Such entry can reasonably be expected to lead to rate reductions from initiatory price competition by the new telco entrant, by emulative or anticipatory rate reductions by incumbent cable companies or combinations of these.<sup>8</sup>

The outcome can be approximated by the framework set out above. The price elasticity of demand for basic cable television service has been estimated by several analysts in recent years. Different model specifications, methodologies and data sets have yielded a spread of estimates of the value for the own-price elasticity for basic cable services. For simplicity, we have assumed a value of -2.0, which is slightly below the midpoint of the range (and mean) of several values included in a recent FCC survey of cable service demand studies.<sup>9</sup> The range of estimates is bounded by (minus) 1.054 and (minus) 3.375.

We assume an average cable rate reduction ( $\Delta P/P$ ) of 20% resulting from the

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<sup>8</sup> Additional consumer welfare will be created if telco entry provokes rate adjustments by other local video providers, or if entry causes incumbents to increase the value of services provided at all prices. While these effects are not likely to be negligible, we have not attempted to quantify them here.

<sup>9</sup> See, Federal Communications Commission, CS Docket No. 94-98, First Report. In the Matter of Implementation of Section 19 of the Cable Television Consumer Protection and Competition Act of 1992: Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, Adopted: September 19, 1994, Released: September 28, 1994 pp. H-15, 16 and 17. (Hereinafter, First Cable Competition Report)

introduction of a BLS- provided local video distribution alternative.<sup>10</sup> Further, we estimate the total cable television revenue (PQ in the estimating equation) generated in markets addressed by the BLS service to be approximately \$575 million.<sup>11</sup>

$$(3.5) \quad \Delta W_v = (.5)(-.2)^2(\$575M)(-2.0)$$

$$(3.6) \quad \Delta W_v = \$23,000,000$$

The estimated increase in consumer surplus is substantial, even though the hypothesized wireline broadband system does not extend to all households in the region over the planning horizon. This estimate is more than an order of magnitude higher than the total change in welfare owing to interstate access charge reductions and to local rate reductions. The differences are accounted for by a) the inelasticities of demand for telephone services compared to the very substantial elasticity of demand for cable services demand, b) the fact that the dollars involved in the cost allocation docket permit only small percentage rate reductions in regulated services, compared to the rate reductions reasonably anticipated following new entry into markets dominated by local cable incumbents. Equations (3.5) and (3.6) demonstrate the sensitivity of changes in consumer welfare to these higher values.

The importance of the magnitude of the price change in determining impacts on consumer welfare is made even clearer below in our analysis of the impact on consumer surplus of the introduction of a new service -- i.e., a reduction in an infinitely high price.

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<sup>10</sup> Several studies have estimated the rate effects of competition to incumbent monopoly cable systems. Not surprisingly these vary according to method, data sets and assumptions. In its 1994 review of competition in markets for cable television services, the Commission reported studies concluding competitive rate effects in excess of 20 percent. The Commission conducted its own analysis, estimated a 16% differential and used that figure as the basis for ordering cable systems to roll back rates. The weight of the evidence is nearer the 20 percent figure and, in view of the fact that increases in service quality and program options occasioned by competition is not captured by any of the estimates, we use the twenty percent figure here. Of course, even the lower 16% estimate would result in creation of substantial consumer surplus from introducing the competitive broadband system being considered by BLS. See First Cable Competition Report, paragraphs 213-218 for fuller discussion of the points summarized here.

<sup>11</sup> The method used is as follows: Average revenue per cable household is calculated from data provided by Paul Kagan and estimated to be approximately \$400 per year in 1996; the number of households passed by the hypothetical BLS system in the fifth year is taken to be about two and a quarter million (up from about a million in the third year); and, we suppose the national average penetration cable homes passed -- 65% -- is a good estimate of the take-up rate in BLS markets.

**Foregone Investment -- Impact in "Other" Broadband Services Market.** In addition to the video services considered above, the construction by BLS and other LECs of a broadband capability will make possible the provision of other regulated or unregulated broadband data or video services. One prime candidate is provision of broadband Internet access. We have performed no study of the likely demand for such a service at different prices, bandwidth specifications, and related service features and are not aware of such studies by others. Thus, the following calculations are illustrative, even though we regard the underlying estimates as entirely reasonable and probably conservative. The lack of specific demand studies for broadband Internet access should not obscure the conclusion shared by most analysts and managers of major information industry firms in software, hardware and network systems. The market for broadband access to Internet services will be enormous and will grow dramatically following introduction of reasonably priced options.

Estimating the gains in consumer surplus from introduction of a new service by the method used above requires some modifications.<sup>12</sup> A service that is not available has an effective price higher than the highest price any consumer would be willing to pay for the service. That price, the "virtual" price, is the lowest price that induces zero market demand. A slightly lower price will evoke "some" effective demand. The increase in consumer surplus from a new service can be estimated using the current framework by a) defining the "virtual" price --  $P^*$  in diagram 1, b) hypothesizing the price at which the new service will be introduced --  $P_0$  in the diagram, c) specifying the price elasticity at that point and d) estimating the size of the market ( $Q_0$ ) at that price.

For illustrative purposes, we will use a "virtual" price of \$300 a month, which seems appropriately conservative for present purposes, given that some users in some markets have indicated a willingness to pay over \$250 per month plus installation for a 128 K access line. Internet connections via LEC wireline broadband networks will likely have substantially greater bandwidth and also offer access to Internet services.

We assume further that the BLS network will provide (10 Megabit) access for \$50 per month (a fifty percent premium to the average monthly cable service bill); that the price elasticity of demand is unity over the relevant range; and, that the number of subscribers in five years will be about a half million hook-ups connecting roughly 20% of the homes passed. The results are below.

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<sup>12</sup> For a fuller, more careful discussion of the analytical issues associated with estimating welfare enhancements associated with the introduction of new services, see Jerry Hausman and Timothy Tardiff, "Valuation and Regulation of New Services in Telecommunications" (mimeo), July 1995 and the references cited there. Also helpful is Jerry Hausman, "The Cost of Cellular Telephone Regulation" (mimeo), January, 1995.

(3.7)

$$\Delta W_I = (.5)(-.83)^2(\$300M)(-1.0)$$

(3.8)

$$\Delta W = \$103,335,000$$

Our estimates of consumer surplus created by the introduction of a new broadband Internet access service dwarf the consumer surplus impacts modelled previously. Is the \$103 million estimate of increased welfare based on reasonable assumptions? We think so. It might be argued that the penetration rates are too high (or too low). Others might agree with us that the assumption of unit elasticity probably understates the effect of price changes on broadband Internet subscription. We have found adherents on all sides of these provisional and illustrative numbers. However, the specific value of the estimate of welfare gain in (3.8) is less important than its order of magnitude. It makes clear that the effect on new service offerings of the Commission's rules will tend to dominate the impact on existing services because of the very large "virtual" price changes implied.<sup>13</sup>

**Summary and Conclusions.** The table below summarizes the principal assumptions and results of the analysis. While there is no denying some tentative features of the analysis, the differences in the order of magnitude of the results suggest that long term opportunity losses from the proposed Commission treatment of common broadband investment costs -- if it results in LECs foregoing investment in wireline broadband systems of the type being considered by BLS -- are almost assured to outweigh the very modest short term benefits to consumers, as indicated by static consumer welfare measures.

### Summary of Assumptions and Results

	$\Delta P/P$	$-\epsilon$	\$PQ	\$ $\Delta W$
Change in interstate telephone rates	-.034	.8	3.3B	1.5M
Change in local exchange rates	-.047	.05	7.2B	.4M
Change in CATV rates	-.2	2.0	.575B	23M
Introduction of broadband access	-.83	1.0	.300B	103M

<sup>13</sup> This finding is consistent with the magnitude of consumer welfare gains estimated from the introduction of other new telecommunications services. See the discussion in Hausman and in Hausman and Tardiff cited in the previous note.



(3.8)

$$\Delta W_I = \$103,335,000$$

Our estimates of consumer surplus created by the introduction of a new broadband Internet access service dwarf the consumer surplus impacts modelled above. Is the \$103 million estimate of increased welfare based on reasonable assumptions? We think so. It might be argued that the penetration rates are too high (or too low). Others might agree with us that the assumption of unit elasticity probably understates the effect of price changes on broadband Internet subscription. We have found adherents on all sides of these provisional and illustrative numbers. However, the specific value of the estimate of welfare gain in (3.8) is less important than its order of magnitude. It makes clear that the effect on new service offerings of the Commission's rules will tend to dominate the impact on existing services because of the very large "virtual" price changes implied.<sup>13</sup>

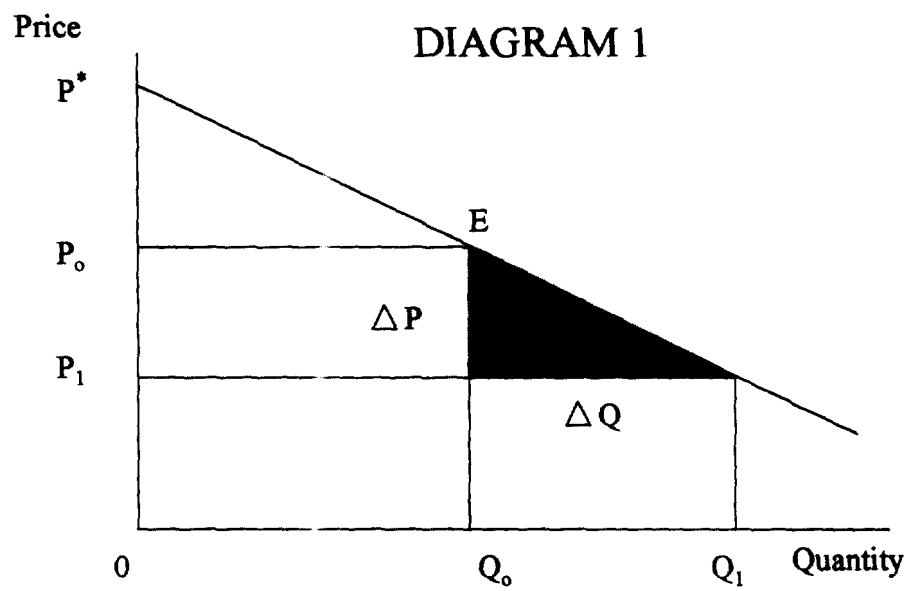
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# APPENDIX A



**Price Changes and Consumer Welfare**